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TITLE: INFORMATION ACCESS WITH TARGETED MARKETING CAPABILITY

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RELATED APPLICATIONS: This application claims priority from Provisional Application Ser. #60/091,597, filed 07/02/98.

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GOVERNMENT FUNDED RESEARCH: Not applicable

## BACKGROUND OF THE INVENTION

1. Field of the Invention - The invention is in the field of information distribution.

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### 2. Brief Description of the Background Art

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PCS and cellular telephones are now used primarily for two-way voice communications and to a more limited degree, with mobile modems, to access computer network or the Internet. However, they are capable of providing a much more general information access portal. It would also be useful to combine this distribution of mass media with a targeted marketing capability and the ability to accurately measure its subscriber's access to these services.

## SUMMARY OF THE INVENTION

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The novel communication architecture and service disclosed here permits, among other things, subscribers to obtain wireless cellular access to information providers and the ability of advertisers to target advertisements to individuals fitting specific demographic profiles. The service provided by this architecture permits cellular telephone subscribers (analog cellular or digital PCS) to dial into a server that provides access to a wide variety of information and

entertainment content not normally available to a mobile subscriber. Since the server has access to the identity of the calling subscriber through Caller ID technology and access to each caller's demographic information through the caller's cellular telephone subscription, the advertising content of the information services called can be tailored individually to each caller. The kinds of information services accessed can range from real time news, sports, weather, traffic and real time financial information to various entertainment media. Specific informational elements are also accessible on call. If a cellular feed into a portable PC is provided, the subscriber can access the Internet or receive audio or slow scan video via a wireless modem.

Individually targeted advertising can also be provided to receivers of broadcast information or entertainment content through this architecture. The advertising spots selected by the system for an individual user can be inserted as the content is broadcast or, more likely, transmitted in larger segments and stored locally in the user's selected receiver for insertion on cue in place of the regularly transmitted advertising spots. Since the particular service accessed and the duration of each session is known, advertisers and content providers can receive precise information regarding user's listening patterns. It is also possible for the user to designate specific informational or entertainment material to be inserted in the regular programming. For example, a user could request the hourly insertion of portfolio stock quotes or segments of the top ten record hits. It is contemplated that free airtime will be provided for a range of services, but that the subscriber will be billed for access to premium services.

Through this architecture, the subscriber will have mobile access to information not otherwise available to mobile individuals and fixed radio access to information not otherwise available to radio listeners. The phone's alphanumeric display shows which service is accessed. The architecture includes a central content and data processing center that receives subscriber

any advertiser information and a receptor device in each subscriber's receiver, equipped to supply the necessary logic, memory and switching. Communication between the various systems incorporated in the architecture is provided by a combination of wire-line, wireless, and satellite transmission facilities.

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## BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic view of a communication architecture of the invention embodied using PCS service.

Figure 2 is a block diagram of the architecture of Fig. 1.

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Figure 3 is a block diagram of the architecture of Fig. 1, showing the use of a Master Server and Regional Servers.

Figure 4 is a block diagram of an exemplary architecture of the invention in which the Master Server function is embodied within each content provider.

Figure 5 is a schematic view of a communication architecture of the invention incorporating broadcast transmission and a variety of possible receiver technologies.

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Figure 6 is a schematic view of exemplary functional units within a receptor unit, showing information flow pathways.

## DETAILED DESCRIPTION OF THE INVENTION

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The general architecture and information flow related, for example, to PCS/cellular mobile telephone is illustrated in Fig. 1. The national or international master server 1 receives news and entertainment content from content providers and advertising messages from advertisers. The advertisers also provide direction as to the geographic and demographic focus

of each advertisement. The master server either communicates directly with a cellular carrier 2 or through a regional or local server 3 via terrestrial or satellite links 6, 7. The regional or local server can provide cut-away to local news, traffic or weather or to geographically or demographically focused advertisements. The cellular phone or other cellular sending/receiving device 4 places a "call" to the service desired, e.g., the audio from a sports channel, through the cellular network 5 to the cellular carrier 2 and the master server 1. The call can be placed using a code controlled by the cellular carrier, e.g., #INFO. If a caller receives a call while in an information service, a call-waiting signal can permit the caller to exit the service and receive the call.

10 In Fig. 1 links labeled "A" denote that content providers can uplink content to a satellite or can use terrestrial line service. Links labeled "B" denote that satellite or terrestrial facilities access local or regional servers to customize content for individual listening habits. "C" denotes customer interaction with local/regional server based on listening habits. Links marked "D" denote customer listening habits being fed back to advertisers and content providers to show exact listening patterns. Also, billing can be initiated for pay services.

When the master server receives the call, it recognizes the information service being called and the identity of the caller. Knowledge of the caller's identity gives the master server access to an information file containing demographic information from the subscription to cellular service and any additional information the caller may supply in connection with this service. It provides access to that "channel" and, for example, signals the network to mute the caller's audio return feed. The mute function saves battery power and band width, since this is a primarily "receive only" service. The server maintains control of the information flow and, when an advertising spot is detected through detection of a cue signal inserted by the content provider,

the server, through its software control, can select an advertising spot for that subscriber or subscriber group based on the advertiser's geographic or demographic focus. The transmission to each subscriber can be handled individually or globally. This focused advertising capability may result in the economic ability for the service to provide free cellular airtime for a range of information and entertainment services. Thus, subscribers will hear advertisements they are more likely to be interested in and advertisers will reach subscribers more likely to act on their advertisements. In addition, users of the service can direct insertion of specific informational or entertainment content in regular programming.

The subscriber can also access premium services for which it has agreed to pay.

“Dialing” a number corresponding to such a service signals the master server to provide billing information to a billing system and release the programming to the subscriber. An example of such a premium service would be an investment portfolio monitoring service that would monitor a subscriber's portfolio and initiate a call should a position pass a set trigger and transmit that information to an alphanumeric display on the subscriber's phone or to the subscriber when the subscriber answers. The subscriber could then switch into send mode and execute a buy/sell order by, for example, depressing an “action” button. If the phone were to provide digital feed into a personal computer (PC) or if a PCS chip were to be incorporated in a PC or other device, the subscriber could receive limited graphics or text, or slow motion video. Feed of the cellular PCS telephone signal into a low power FM modulator would permit reception through any FM radio, permitting both fixed and mobile (e.g., car radio) reception of information not normally available through radio equipment or it could be played directly through speakerphone equipment. Most desirably, a receptor unit, incorporating the required communication, storage, and control functionality is incorporated in each receiving device.

The national or international master server 1 can communicate with one or more regional or local servers 3 through terrestrial 6 or satellite 7 links. Software in the regional or local server 7 can permit that server to slot in local information and local advertisements.

Figure 2 is a block diagram of an exemplary embodiment of the inventive architecture.

5 The master server 1 receives information from content providers 8 and advertisers 9. The advertisers 9 provide the advertising spots and target information including the geographic and demographic focus for each spot. The master server 1 returns usage information to the advertisers. The subscribers 4 dial into the wireless carrier 2 through the cellular network 5. In Fig. 3, the master server 1 is operating through regional/local servers 3, each communicating  
10 with a cellular provider 2 in its region. Through such an arrangement, an international master server could provide service in several languages, each regional server, for example, handling advertising in its local language.

Figure 4 illustrates a somewhat less capable, but still valuable architecture in which the caller 4 "dials" directly through to each content provider. Since the content provider knows the  
15 identity of the caller 4, the content provider can provide focused advertising and will obtain direct program rating information.

Example – The service may operate in the following manner:

1. When enrolling in the service, the subscriber selects a method of reception, the  
20 receiver (phone, cellular or PCS phone, satellite, traditional radio (AM/FM) or other reception scheme or combination of the above), and answers questions on demographics and interest categories: A questionnaire can be filled out by hand or, preferably, on the web where a subscriber can periodically change the entered parameters. For some contemplated arrangements



the subscription can be a paid subscription to the service. For other arrangements the user of the service is offered free access.

2. The information is processed by an information server and loaded into a database.

The subscriber is assigned an access code number.

5 3. The access number is used as an access identifier and for addressing appropriate material for return to the subscriber. It is also used in instant transactions.

4. The receiver would be outfitted with a storage and processing receptor, which would be accessed by code to download commercial or other subscriber-specific content, with sequencing information, on a periodic basis. The download would occur automatically, usually  
10 during periods of least or lesser activity for the particular system being employed. The download could be from PCS phone, satellite subcarriers of traditional radio or TV, paging companies, or the digital signals of TV stations, etc. (the same architecture could also be used for such applications as or an integrated phone with voice mail, etc.).

5. Downloaded material would then be available for seamless integration, switched  
15 by the receptor into the real time programming. Real time programmers would send a start code (or cue) downstream to the receptor triggering the stored material for play. Each module of stored material can have a corresponding stored identifier code. The time the subscriber spends listening to real time programming and the identification of the downloaded material would then be recorded in the storage device for uploading to the server to verify listenership, generally (but  
20 not exclusively) using wireless technology, e.g., PCS phone. Such a service would offer "overnights" to the aural media business.

6. Assuming use of a PCS or similar link, the subscriber can immediately respond to commercial or other content by initiating a return, e.g., pressing a button for additional

information or to place an instant order (the server has the subscriber's information on file) or in response to questions.

7. Once the downloaded information is played, an End of Message (EOM) code would rejoin the "local" content to the primary programming. In the event no downloaded material is available in memory the default mode would be to continue the primary program which during such periods would consist of general content or commercials.

8. New downloads would wipe out all or part of previously stored content depending upon instruction set, ready for the next play. The subscriber can also manually store content.

9. The service could be pay for play, free as an incentive for provision of usage data to content providers, or a combination of both.

Figure 5 illustrates application of the disclosed communication architecture to include broadcast information of entertainment programming and access through a wire-line telephone. Here, the master server 1 in a content and data processing center includes a content server 10, a statistical data server 11 and a database linked to the two servers. The content server 10 and statistical data server 11 functions can be implemented as software-defined portions of a single server entity. The content server 10 receives and process the insertion material, be it advertising spots from advertisers or information content as requested by users. The insertion material is assembled into modules and an identification code is attached to each module.

20 For service, such as those employing PCS/cellular mobile telephone the principal information and entertainment content pass through the master server. The individually selected insertion material is inserted either by the content server 10 or the receptor device in the receiver 13. The content server 10 communicates with the cellular base station 14 by either satellite 15 or

by the telephone land network 16. The T1 and DS3 rates are merely indicated by way of example.

The architecture illustrated in Figure 5 can also be used to selected content modules for insertion into broadcast transmissions received by mobile listeners, such as car radios 17 or stationary broadcast receivers, such as radios 18 or television sets 19. In order to participate in the service, broadcast receivers must be supplied with receptor units, as will be described below. These receptors incorporate two-way communication facility for communication back to the context server 10 and statistical data server 11, for example by PCS/cellular mobile radio or direct satellite link. A terrestrial-based telephone 20, provided with a receptor unit can dial into the user's desired information or entertainment provider and have individually selected content modules inserted in the regular programming in place of regular commercial spots or, for example, at times preselected by the user.

Each receiver can also be supplied with an action button 21 to initiate communication back to the content server 10. The action button 21 can, for example, initiate a response to an inserted commercial spot by ordering a product or requesting additional information. Since the database includes the user's name and contact information (address, e-mail address. . . ) and, perhaps, the user's credit card number, such ordering is facilitated. Various coding schemes are possible, responding to, for example, one or two depressions of the action button 21.

Figure 6 illustrates various functions and information flows incorporated in the receptor unit. The receptor unit performs the various information processing, communication, and switching functions required within each receiver to enable the receiver to participate in the disclosed service. These functions are under stored program control from a microprocessor 22. The communication device, such as RF Transceiver 23 is fed by a data multiplexer 24,

controlled by the microprocessor 22 to feed the regular information or entertainment content 25  
of the station, insertion content 26 to the audio output device 27. The receptor may also be  
equipped with a return voice channel 28 or a return data channel 29. The return data channel 29  
incorporates a storage function that, for example, stores usage information for periodic download  
5 to the station's statistical data server 11. In the case of FM radio broadcast, RDF data,  
broadcast along with the FM radio signal, could be stored and used to enable additional services.

## 1 CLAIMS

2 What is claimed is:

- 3 1. A system for providing a user with access to information and entertainment content with  
4 individually selected insertion content, through a receiver equipped with an interactive  
5 receptor, the system comprising:
- 6 (a) a content server comprising (i) means for receiving insertion content and  
7 demographic target information from insertion content sources and storing the insertion  
8 content and demographic target information in a database, (ii) means for receiving  
9 demographic information and receiver selection information from the subscriber and  
10 storing said information in the database, (iii) means for receiving user insertion  
11 instructions from the user and storing said instructions in the database, and (iv) means for  
12 selecting a portion of the insertion content comprising at least one insertion module in  
13 accordance with the demographic information, the user insertion instructions, and the  
14 demographic target information, and for transmitting the portion of insertion content to  
15 the user;
- 16 (b) a statistical data server comprising (i) means for receiving usage information from  
17 the user and storing the usage information in the database and (ii) means for transmitting  
18 the usage information to the insertion content sources and to the information and  
19 entertainment content providers for rating and billing purposes; and
- 20 (c) the database comprising means for communicating with the content server and the  
21 statistical data server.

22

- 1 2. A system of Claim 1 in which each insertion module includes an identifier code for use by  
2 the interactive receptor in effecting insertion of the insertion module.  
3
- 1 3. A system of Claim 1 comprising means for receiving information and entertainment content  
2 from content providers and transmitting the information and entertainment content to the  
3 user.  
4
- 1 4. A system of Claim 3 comprising means for inserting the insertion module into the  
2 information and entertainment content.  
3
- 1 5. A system of Claim 4 in which the receiver is a PCS or cellular mobile telephone device or a  
2 personal computer equipped for PCS or cellular mobile communication.  
3
- 1 6. A system of Claim 4 comprising means for transmitting a plurality of insertion modules in  
2 series to the receiver for storage in the receptor and cueing information for inserting a first  
3 insertion module into the information and entertainment content.  
4
- 1 7. A system of Claim 4 in which the receiver is a telephone accessing the content server through  
2 a landline link.  
3
- 1 8. A system of Claim 1 in which the receiver is a broadcast receiver for receiving broadcast  
2 programming, the system comprising means integrating the portion of advertising  
3 information with the broadcast programming.

1 9. A system of Claim 8 comprising means for transmitting the plurality of advertising spots in  
2 seriee to the receiver for storage in the receptor and cueing information for substituting a  
3 first advertising spot for regular advertising information contained in the broadcast  
4 programming.

1 10. A system of Claim 1 in which the insertion module is an advertising spot and the insertion  
2 content source is an advertiser.

1 11. A system of Claim 1 in which the insertion module comprises information selected in  
2 accordance with the user insertion instructions.

1 12. An interactive receptor for incorporation in a receiver, the interactive receptor comprising:

- 2 (a) a processor for controlling the receptor and the receiver;
- 3 (b) a memory, in communication with the processor, for storing a control program,  
4 usage information, and insertion modules;
- 5 (c) audio output means, in communication with the memory an the processor, for  
6 converting the stored insertion modules to an analog audio output, and
- 7 (d) a switch for inserting the analog audio output into information and entertainment  
8 content received by the receiver.

1 13. An interactive receptor of Claim 12 comprising means for transmitting usage information to  
2 a statistical data server.

1 14. An interactive receptor of Claim 12 comprising means for transmitting user generated  
2 instructions to the content server.  
3

1 15. An interactive receptor of Claim 12 comprising means for transmitting user generated  
2 instructions received from an action button.  
3

1 16. A method for operating a communication system in order to provide a user with access to  
2 information and entertainment content and individually selected insertion content, the  
3 method comprising:

4 (a) receiving insertion content and demographic target information from insertion  
5 content sources in a content server and storing said information in a database;

6 (b) receiving demographic information and receiver selection information from the  
7 user in the content server and storing said information in the database;

8 (c) selecting a portion of the insertion content in accordance with the demographic  
9 information and user insertion instructions from the user and the demographic target  
10 information from the insertion content sources; and

11 (d) transmitting the portion of the insertion content to the subscriber  
12

1 17. A method of Claim 16 in which the portion comprises at least one selected insertion  
2 module.  
3

1 18. A method of Claim 17 in which the at least one insertion module is transmitted to the  
2 user together with the information and entertainment content.



3

1 19. A method of Claim 17 in which a plurality of insertion modules are transmitted to the  
2 user independent of the information and entertainment content for storage in the user's  
3 receiver for later integration with the information and entertainment content.

4

1 20. A method of Claim 17 including receiving usage information in a statistical data server  
2 and storing it in the database.

3

1 21. A method of Claim 20 including transmitting the usage information to advertisers and  
2 content providers for rating and billing purposes.

3

1 22. A method of Claim 20 including transmitting the usage information to content providers  
2 for billing purposes.

3

4

1 23. A system for providing a subscriber access to information and entertainment content with  
2 individually selected advertising content through a receiver equipped with an interactive  
3 receptor, the system comprising:

4 (a) a content server comprising (i) means for receiving advertising information and  
5 demographic target information from advertisers and storing the advertising and  
6 demographic target information in a database, (ii) means for receiving demographic  
7 information and receiver selection information from the subscriber and storing said  
8 information in the database, and (iii) means for selecting a portion of the advertising

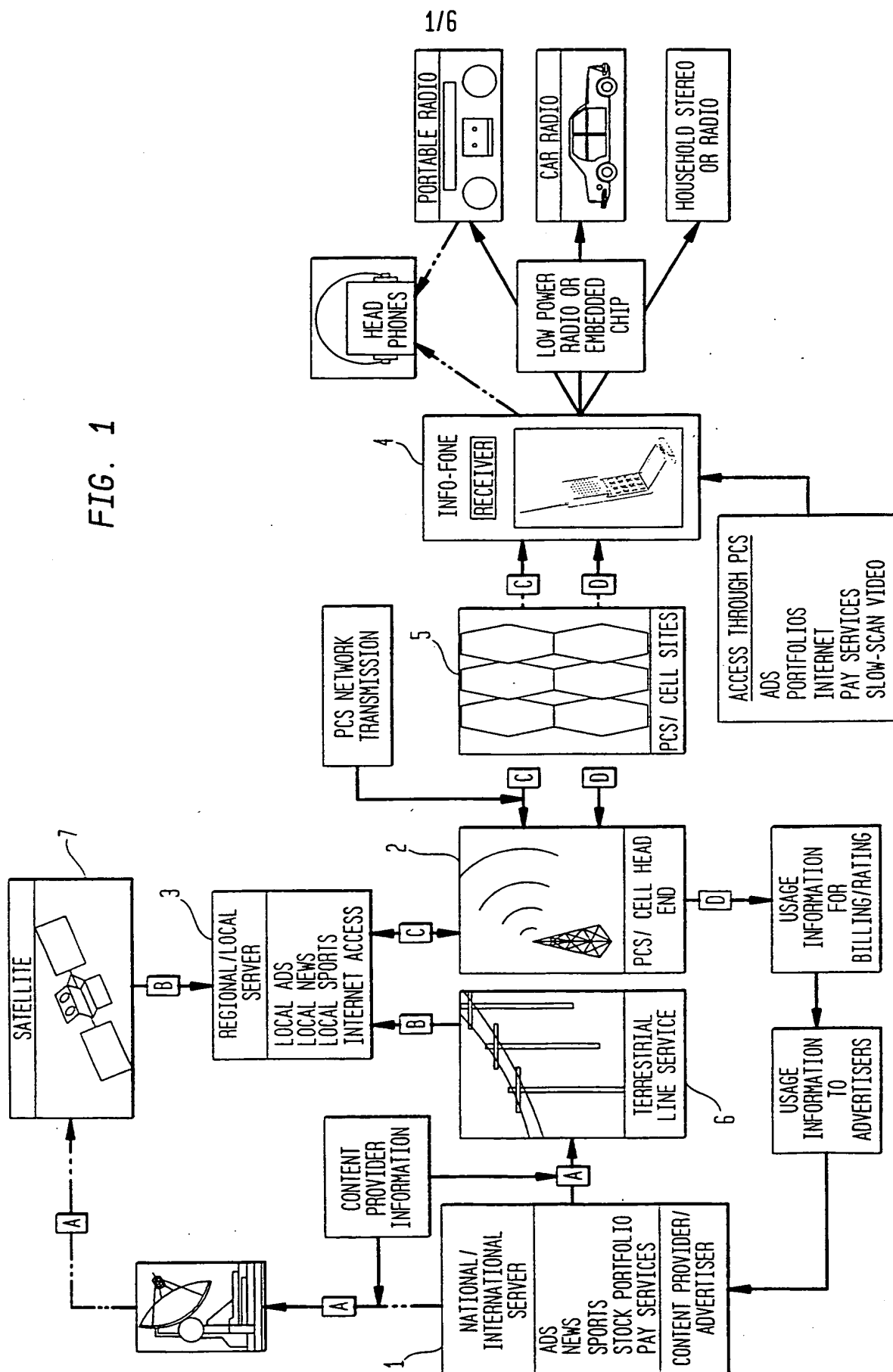
9 information comprising a plurality of advertising spots in accordance with the  
10 demographic information and the demographic target information, and for transmitting  
11 the portions of advertising information to the subscriber;

12 (b) a statistical data server comprising (i) means for receiving usage information from  
13 the subscriber and storing the usage information in the database and (ii) means for  
14 transmitting the usage information to the advertisers and to content providers for rating  
15 and billing purposes; and

16 (c) the database comprising means for communicating with the content server and the  
17 statistical data server.

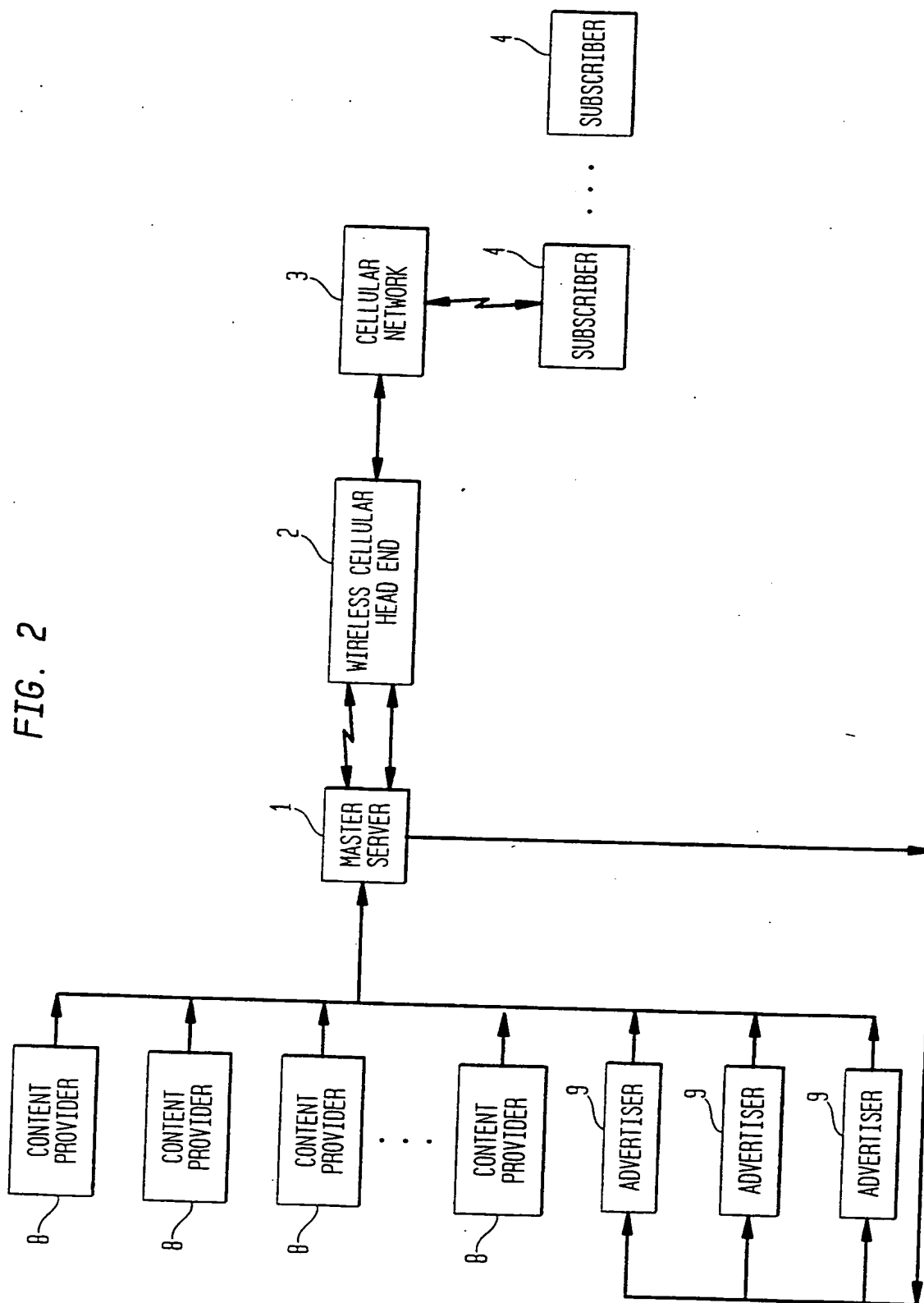
18  
1 24. A system of Claim 23 in which the receiver is a digital PCS or an analog cellular mobile  
2 telephone.

FIG. 1



2/6

FIG. 2



3/6

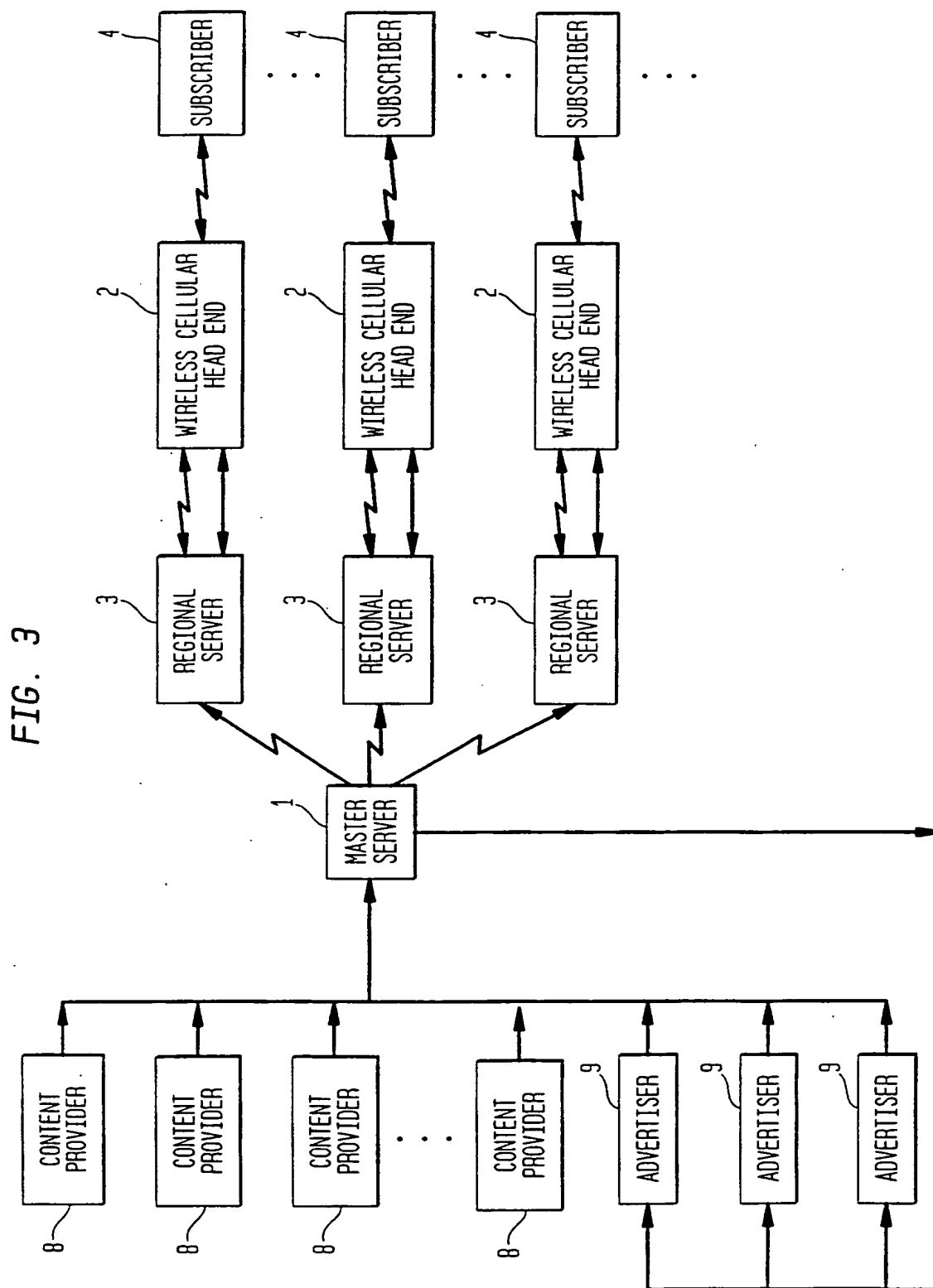
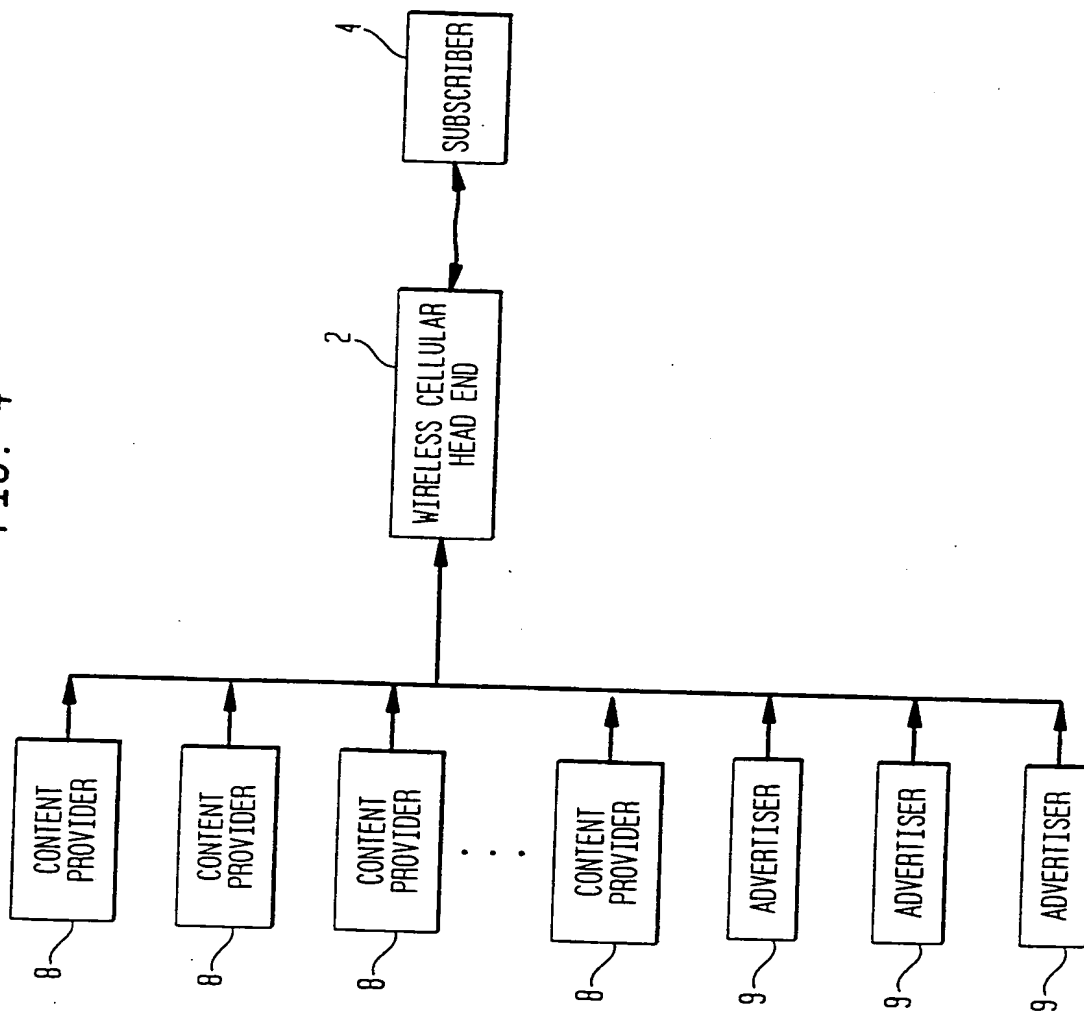


FIG. 4



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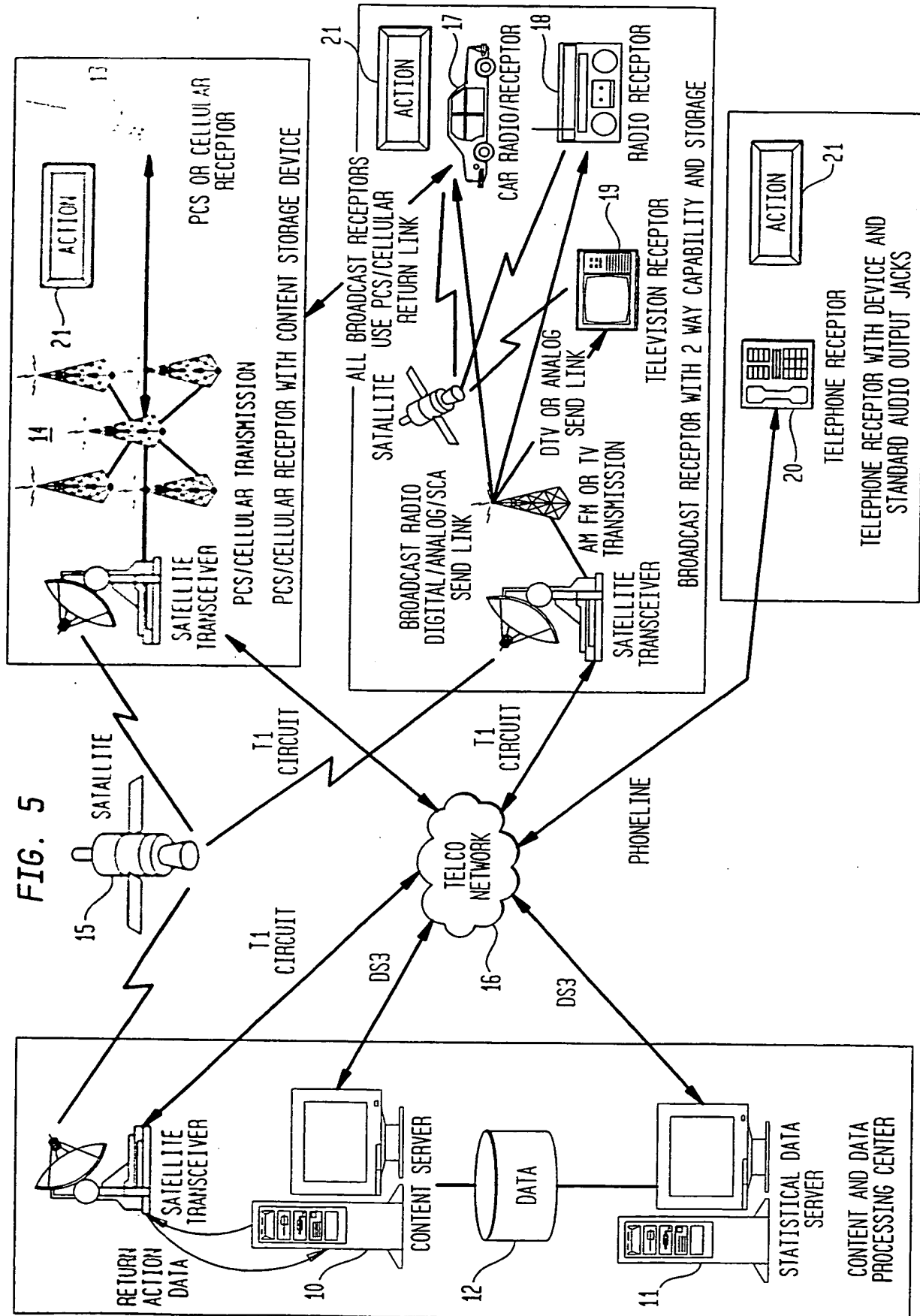
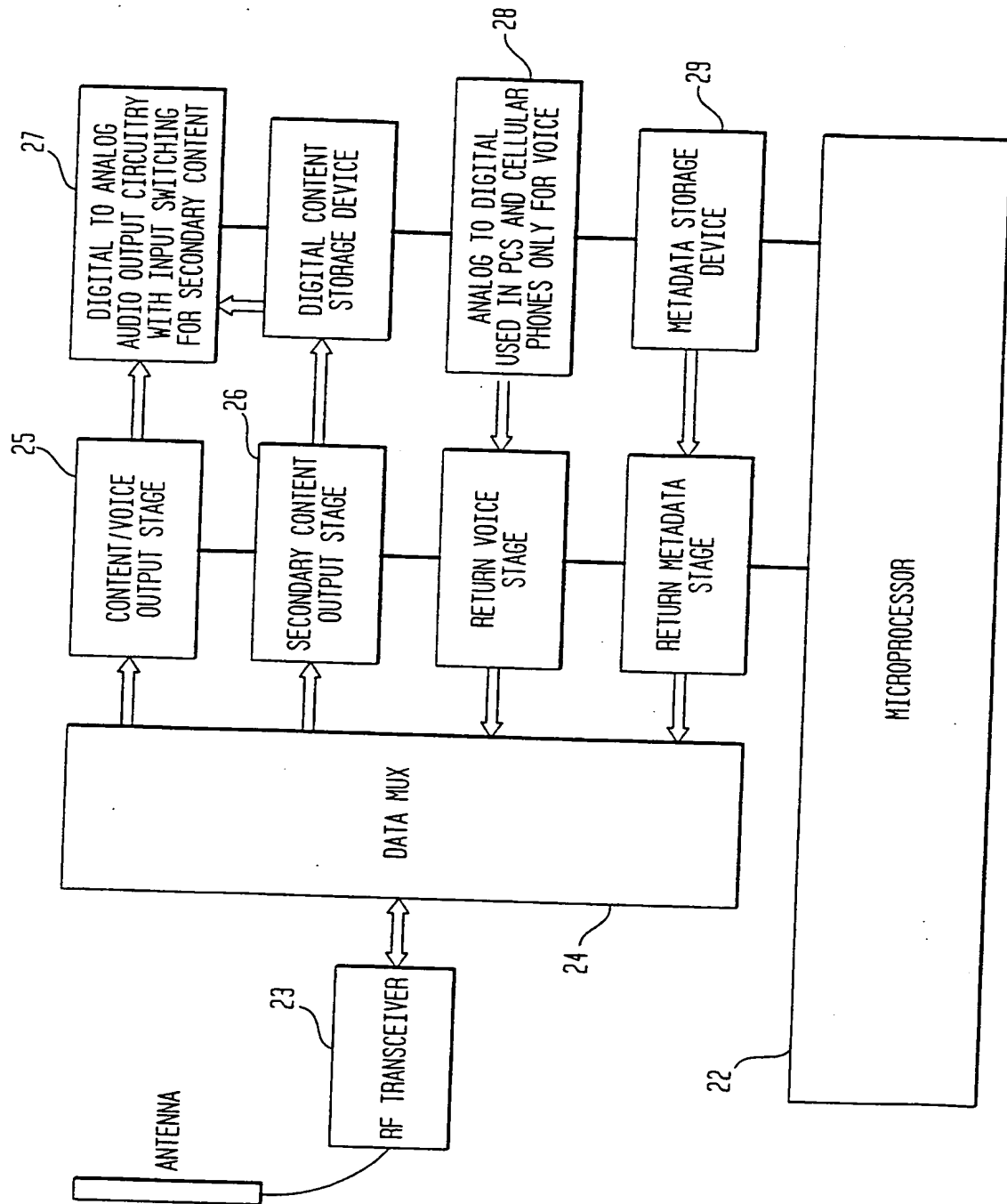


FIG. 6





## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US99/14128

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :H04N 7/173, H04B 10/00, A61B 5/021

US CL :455/2; 348/13, 2; 340/928; 345/348

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. :

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US 5,204,768 A (TSAKIRIS et al.) 20 April 1993, Figure 1, col.12 and 13, lines 60-68 and 1-46	1-23
X,P	US 5,150,828 A (LUTTERBACH et al.) 23 April 1996, Figure 6, col. 6, lines 36-65	1-11 and 13-23

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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Date of the actual completion of the international search

11 AUGUST 1999

Date of mailing of the international search report

20 OCT 1999

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